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## **Executive Summary – Rapid Vector Surveillance After Floods in Southeast Kansas, 2007**

**Introduction.** On June 30<sup>th</sup>, Governor Sebelius declared a state of disaster with an ensuing federal disaster declaration July 2<sup>nd</sup> because of flooding in twenty-one counties of Southeast Kansas. Rain and flood waters led to increased numbers of mosquitoes, which were of concern to residents and recovery workers. KDHE officials recognized the potential public health threat posed by standing waters following floods and persistent rain which could provide habitat for an increased numbers of mosquitoes. Mosquitoes are generally categorized as pest (nuisance or non-disease carriers) and vector (disease carriers) species. Abundant pest mosquitoes can hamper recovery efforts, while numerous vector mosquitoes may increase human illness from West Nile virus (WNV) Western Equine encephalitis (WEE), or St. Louis encephalitis (SLE). On July 13<sup>th</sup>, an Emergency Management Assistance Compact request was approved and a team of entomologists from the North Carolina Department of Environment and Natural Resources was deployed to conduct vector (mosquito) surveillance in Kansas.

**Rapid Vector Surveillance Mission.** Entomologists worked with KDHE and local officials in Elk, Neosho, Montgomery, and Wilson counties to collect mosquito specimens in 27 locations for 10 days. The team identified the species of each mosquito and grouped like species into “pools” that were sent to the Centers for Disease Control and Prevention (CDC) for viral assay. The CDC looked for genetic evidence of WNV, WEE, and SLE in the pooled *Culex* specimens. Entomologists provided expert opinion to local emergency response workers, government entities, media, and members of the community where traps and mosquito sampling occurred.

**Results.** Seven species made up 90.7 % of the 10, 512 specimens collected. Pest (nuisance) mosquitoes comprised the greatest number of specimens (53.1%); vector (known to carry WNV) species made up 37.6%. Entomologists found a species new to Kansas, *Psorophora mathesoni*. There were 235 separate pools of vector mosquito species forwarded to CDC; 30 (12.8%) were WNV (+) and 18 of the positive pools were from a single location. WNV was detected in 10 of 27 (37.0%) trap sites. Montgomery, Neosho, and Wilson counties all had WNV (+) pooled samples. Twenty-five percent of all Montgomery pooled samples were WNV (+); 12.1% of pooled samples from Wilson were WNV (+). Neosho had the lowest at 3.4%. No WNV was detected in Elk. *Cx tarsalis* is another major vector of WNV but with only five specimens found in two counties, no specimens were sent to the CDC. The CDC identified Montgomery with the highest infection rate (among *Cx pipiens* complex) at 22.5 per 1,000. Entomologists noted that though the WNV infection rates appear moderately high at certain sites (two locations were the source of 22 of the 30 WNV (+) pooled samples), the mosquito surveillance data indicated a low density of the most important WNV vectors in the flooded areas.

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**Study summary.** Heavy rains resulted in retained water away from the river areas. Abundant livestock and related waste runoff during rains attracted mosquitoes to lay eggs. However, WNV was not generally distributed at high levels. This study supported the guidance for emptying and removing containers, eliminating or treating standing ground water, and using personal protective measures. The current disease surveillance shows no more than expected cases of human illness from mosquito borne viruses reported. A collaborative manuscript will be drafted and submitted for publication by the principle investigators in coming months.